MATHS
Daily Practice Problems
Target IIT JEE-2027

CLASS : XI | **TIME : 35 MIN.** | **DPP.NO. 1**

Solve the following inequalities

1. $\frac{6x-5}{3x-7} < 0$

2. $(x-1)(3-x)(x-2)^2 > 0$

3. $\frac{6x-5}{4x+1} < 0$

4. $\frac{2x-3}{3x-7} > 0$

5. $\frac{0.5}{x-x^2-1} < 0$

6. $\frac{x^2-5x+6}{x^2+x+1} < 0$

7. $\frac{x^2+2x-3}{x^2+1} < 0$

8. $\frac{(x-1)(x+2)^2}{-1-X} < 0$

9. $\frac{X^2+4x+4}{2x^2-x-1} > 0$

10. $x^4 - 5x^2 + 4 < 0$

11. $x^4 - 2x^2 - 63 \le 0$

ANSWER KEY

1. $x \in \left(\frac{5}{6}, \frac{7}{3}\right)$ **2.** $(1, 2) \cup (2, 3)$ **3.** $(-1/4, 5/6)$

4. $(-\infty, 32) \cup (7/3, +\infty)$ **5.** $(-\infty, +\infty)$ **6.** $(2, 3)$

7. $(-3, 1)$ **8.** $(-\infty, -2) \cup (-2, -1)$ **9.** $(-\infty, -2) \cup (-2, -1/2)$

10. $(-2, -1) \cup (1, 2)$. **11.** $[-3, 3]$.

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CLASS : XI | **TIME : 35 MIN.** | **DPP.NO. 2**

Solve the following inequalities

1. $\frac{3}{x-2} < 1$ **2.** $\frac{1}{x-1} \le 2$ **3.** $\frac{4x+3}{2x-5} < 6$

4. $\frac{5x-6}{x+6} < 1$ **5.** $\frac{5x+8}{4-x} < 2$ **6.** $\frac{x-1}{x+3} > 2$

7. $\frac{7x-5}{8x+3} > 4$ **8.** $\frac{x}{x-5} > \frac{1}{2}$ **9.** $\frac{5x-1}{x^2+3} < 1$

10. $\frac{x-2}{x^2+1} < -\frac{1}{2}$ **11.** $\frac{x+1}{(x-1)^2} < 1$ **12.** $\frac{x^2-7x+12}{2x^2+4x+5} > 0$

13. $\frac{x^2+6x-7}{x^2+1} \le 2$ **14.** $\frac{x^4+x^2+1}{x^2-4x-5} < 0$

ANSWER KEY

1. $(-\infty, 2) \cup (5, +\infty)$

2. $(-\infty, 1) \cup [3/2, +\infty)$. **3.** $(-\infty, 5/2) \cup (33/8, +\infty)$ **4.** $(-6, 3)$.

5. $(-\infty, 0) \cup (4, +\infty)$. **6.** $(-7, -3)$. **7.** $(-17/25, -3/8)$.

8. $(-\infty, -5) \cup (5, +\infty)$. **9.** $(-\infty, 1) \cup (4, +\infty)$. **10.** $(-3, 1)$.

11. $(-\infty, 0) \cup (3, +\infty)$. **12.** $(-\infty, 3) \cup (4, +\infty)$. **13.** $(-\infty, +\infty)$.

14. $(-5, 5)$.

Solve the following inequalities

1. $\frac{1+3x^2}{2x^2-21x+40}<0$ **2.** $\frac{1+x^2}{x^2-5x+6}<0$ **3.** $\frac{x^4+x^2+1}{x^2-4x-5}>0$

4. $\frac{1-2x-3x^2}{3x-x^2-5}>0$ **5.** $\frac{x^2-5x+7}{-2x^2+3x+2}>0$ **6.** $\frac{2x^2-3x-459}{x^2+1}>1$

7. $\frac{x^2-1}{x^2+x+1}<1$ **8.** $\frac{x}{x^2-3x-4}>0$ **9.** $\frac{x^2+7x+10}{x+\frac{2}{3}}>0$

10. $\frac{3x^2-4x-6}{2x-5}<0$ **11.** $\frac{17-15x-2x^2}{x+3}<0$ **12.** $\frac{x^2-9}{3x-x^2-24}<0$

ANSWER KEY

1. (5/2, 8). **2.** (2, 3). **3.** $(-\infty,-1)\cup(5,+\infty)$.

4. $(-\infty,-1)\cup(1/3,+\infty)$. **5.** (–1/ 2, 2). **6.** $(-\infty,-20)\cup(23,+\infty)$.

7. $(-2,+\infty)$. **8.** $(-1,0)\cup(4,+\infty)$. **9.** $(-5,-2)\cup(-2/3,+\infty)$.

10. $(-\infty,(2-\sqrt{22}/3)\cup((2+\sqrt{22}/3,5/2)$. **11.** $(-17/2,-3)\cup(1,+\infty)$.

12. $(-\infty,-3)\cup(3,+\infty)$.

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CLASS : XI | **TIME : 35 MIN.** | **DPP.NO. 4**

1. $\frac{x+7}{x-5}+\frac{3x+1}{2}\geq 0$

2. $2x^2+\frac{1}{x}>0$

3. $\frac{x^2-x-6}{x^2+6x}\geq 0$

4. $\frac{x^2-5x+6}{x^2-11x+30}<0$

5. $\frac{x^2-8x+7}{4x^2-4x+1}<0$

6. $\frac{x^2-36}{x^2-9x+18}<0$

7. $\frac{x^2-6x+9}{5-4x-x^2}\geq 2$

8. $\frac{x-1}{x+1}<x$

9. $\frac{1}{x+2}<\frac{3}{x-3}$

10. $\frac{14x}{x+1}-\frac{9x-30}{x-4}<0$

11. $\frac{5x^2-2}{4x^2-x+3}<1$

12. $\frac{x^2-5x+12}{x^2-4x+5}>3$

13. $\frac{x^2-3x+24}{x^2-3x+3}<4$

ANSWER KEY

1. $[1, 3]\cup(5, +\infty)$.

2. $(-\infty, +-1/\sqrt[3]{2})\cup(0, +\infty)$.

3. $(-\infty,6)\cup[-2,0)\cup(3, +\infty)$.

4. $(2,3)\cup[5,6)$.

5. $(1,7)$.

6. $(-6, 3)$.

7. $(-5,1)\cup\{3\}$.

8. $(-1, +\infty)$.

9. $(-9/2, -2)\cup(3, +\infty)$.

10. $(-1,1)\cup(4, 6)$.

11. $(-(1+\sqrt{21})/2, (\sqrt{21}-1)/2)$.

12. $(1/2,3)$.

13. $(-\infty, -1)\cup(4, +\infty)$.

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CLASS : XI | **TIME : 35 MIN.** | **DPP.NO. 5**

Solve the following inequalities

1. $\frac{x^2-1}{2x+5} < 3$

2. $\frac{x^2+1}{4x-3} > 2$

3. $\frac{x^2+2}{x^2-1} < -2$

4. $\frac{3x-5}{x^2+4x-5} > \frac{1}{2}$

5. $\frac{2x+3}{x^2+x-12} \le \frac{1}{2}$

6. $\frac{5-2x}{3x^2-2x-16} < 1$

7. $\frac{15-4x}{x^2-x-12} < 4$

8. $\frac{1}{x^2-5x+6} \ge \frac{1}{2}$

9. $\frac{(2-x^2)(x-3)^2}{(x+1)(x^2-3x-4)} \ge 0$

10. $\frac{5-4x}{3x^2-x-4} < 3$

11. $\frac{19-33x}{7x^2-11x+4} > 2$

12. $\frac{0.5x+49}{10x^2+x-2} < \frac{1}{2}$

ANSWER KEY

1. $(-\infty, -5/2) \cup (-2, 8)$.

2. $(3/4, 1) \cup (7, +\infty)$.

3. $(-1, 0) \cup (0, 1)$.

4. $(-5, 1)$.

5. $(-\infty, -4) \cup (-3, 3) \cup (6, +\infty)$.

6. $(-\infty, -\sqrt{7}) \cup [8/3, +\infty)$.

7. $\left(-\infty, -\frac{\sqrt{63}}{2}\right) \cup \left(-3, \frac{\sqrt{63}}{2}\right) \cup (4, +\infty)$.

8. $[1, 2) \cup (3, 4]$.

9. $(-\sqrt{2} - 1) \cup (-1, \sqrt{2}] \cup [3, 4)$.

10. $(-\infty, -\sqrt{7}/2) \cup (-1, \sqrt{7}/2] \cup (4/3, +\infty)$.

11. $(-(11 + \sqrt{737})/28, 4/7) \cup ((\sqrt{737} - 11)/28, 1)$.

12. $(-\infty, -\sqrt{10}) \cup (-1/2, 2/5) \cup (\sqrt{10}, +\infty)$.

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CLASS : XI | **TIME : 35 MIN.** | **DPP.NO. 6**

1. $\dfrac{(x+2)(x^2-2x+1)}{4+3x-x^2} \geq 0$

2. $\dfrac{4}{1+x}+\dfrac{2}{1-x}<1$

3. $2+\dfrac{3}{x+1}>\dfrac{2}{x}$

4. $1+\dfrac{2}{x-1}>\dfrac{6}{x}$

5. $\dfrac{x^4-3x^3+2x^2}{x^2-x-30}>0$

6. $\dfrac{x-1}{x}-\dfrac{x+1}{x-1}<2$

7. $\dfrac{2(x-3)}{x(x-6)} \leq \dfrac{1}{x-1}$

8. $\dfrac{2(x-4)}{(x-1)(x-7)} \geq \dfrac{1}{x-2}$

9. $\dfrac{2x}{x^2-9} \leq \dfrac{1}{x+2}$

10. $\dfrac{1}{x-2}+\dfrac{1}{x-1}>\dfrac{1}{x}$

11. $\dfrac{7}{(x-2)(x-3)}+\dfrac{9}{x-3}+1<0$

12. $\dfrac{20}{(x-3)(x-4)}+\dfrac{10}{x-4}+1>0$

ANSWER KEY

1. $(-\infty, -2) \cup (-1, 4)$.

2. $(-\infty, -1) \cup (1, +\infty)$.

3. $(-\infty, -2) \cup (-1, 0) \cup (1/2, +\infty)$.

4. $(-\infty, 0) \cup (1, 2) \cup (3, +\infty)$.

5. $(-\infty, -5) \cup (1, 2) \cup (6 +\infty)$.

6. $(-\infty, -1) \cup (0, 1/2) \cup (1, +\infty)$.

7. $(-\infty, 0) \cup (1, 6)$.

8. $(1, 2) \cup (7, +\infty)$.

9. $(-\infty, -3) \cup (-2, 3)$.

10. $(-\sqrt{2}, 0) \cup (1, \sqrt{2}) \cup (2, +\infty)$.

11. $(-5, 1) \cup (2, 3)$.

12. $(-\infty, -2) \cup (-1, 3) \cup (4, +\infty)$.